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AUTHOR Graves, Michael F.; And Others
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ABSTRACT

A study was conducted to investigate children's ability to deal with multiple meaning words in isolation and in context. Four low-ability students and four high-ability students from grades two, four, and six were shown nouns rated at the prefcurth, presixth, and pretenth grade levels, and asked to give the meaning of the words. Students received one point for each clear meaning produced for an isolated word and for each appropriate meaning of a word in context. As a group, students' scores with words in context were 50% greater than their scores with words out of context, indicating their ability to use context for comprehension. High-ability students produced 75% more correct responses than low-ability students, and the higher the grade level of the students the more correct were the responses they produced. High-ability second grade students gave 95% as many correct responses as low-ability sixth grade students, indicating that low-ability students' skill with multiple meaning words lags far behind that of high ability students, and that general skill with polysemous words increases as students progress through school. (HTH)

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Michael F. Graves
University of Minnesota
Department of Curriculum and Instruction
Peik Hall
159 Pillsbury Drive Southeast
Minneapolis, Minnesota 55455
(Submitted January 2, 1981)

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Skill with Polysemous Words: A Measurement of the Depth of Children's Word Knowledge

Michael F. Graves
University of Minnesota

Wayne H. Slater & Cheryl L. Cooke
University of Minnesota

As is evident from such sources as Dale, Razik, and Petty's (1973) bibliography of vocabulary studies and Clifford's (1978) review of Edward Thorndike's vocabulary research, from about 1920 to 1950 vocabulary was a frequent topic of educational research. For the past three decades, however, researchers have given little attention to vocabulary. As Calfee and Drum (1978) put it, "perusal of the current literature would suggest that the topic is a vanishing species" (p. 217).

Of course, some research on vocabulary continues to be done. Anglin's (1970) study of the growth in understanding of the relationships among words from childhood to adulthood, Dupuy's (1974) investigation of vocabulary size, and Miller and Johnson-Laird's (1976) work on the relationship between words and concepts are examples. More

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recently, Mason, Kniseley, and Kendall (1979) have studied the effects of polysemous words on sentence comprehension, and Anderson and Freebody (1979) have described their plans for measuring vocabulary size.

However, two recent papers have presented compelling arguments suggesting that vocabulary deserves more attention than it is currently receiving. In the first of these, Becker (1977) argues that lack of vocabulary is one of the most potent factors affecting the school failure of disadvantaged students and proposes a massive program to systematically teach a basic vocabulary. In the second paper, Anderson and Freebody (1979) question Becker's argument that vocabulary knowledge is causally related to school success and suggest that before decisions about vocabulary instruction are made, more information about students' vocabularies is needed.

The study reported here investigates certain qualitative aspects of students' vocabularies. More specifically, it investigates aspects of students' knowledge of multiple meaning words, words which Mason et al. (1979) found to be "a potential source of comprehension difficulty" (p. 49). It directly follows a previous study (Graves, 1979). Subjects for that study were two low ability students and two high ability students from each of grades three and five. It should be noted, however, that three of the four students classified as having low ability scored at about the 30th percentile on the reading section of the SRA Achievement Series (1973). Thus, these students did not comprise a distinctly low ability group. The major result of the study of interest here was that although higher ability students produced nearly twice as many meanings for polysemous words presented in isolation as did lower ability students, higher and lower ability students were nearly equally adept at determining the appropriate meaning of polysemous words when they were placed in the context of a sentence.

The major purpose of the present study was to further investigate students' ability to deal with multiple meaning words in isolation and in context. In doing so, the study included students representing more distinct ability levels and spanning more grade levels than did those in the Graves (1979) study. Additionally, the study investigated the main effects of word difficulty, ability, and grade on students' ability to deal with polysemous words.

Method

Subjects

Subjects for the study were four high ability students and four low ability students at each of grades two, four, and six. All students were from a public elementary school in a middle-class to lower-middle-class suburb of St. Paul, Minnesota. Students in the low ability group scored below the 25th percentile on the reading comprehension subtest of the California Achievement Test (1970), and students in the high ability group scored above the 75th percentile on the same test.

Materials

Materials consisted of two words at each of three levels of difficulty, scripts the examiners followed in administering the interviews, and 3 x 5 cards containing material presented to the subjects. All words were nouns. They were identified as being at the pre-4th, 6th, or 10th grade level using the Harris-Jacobson (1972) and Dale and O'Rourke (1976) word lists. The scripts contained the precise words the examiners used in administering the interviews. The 3 x 5 cards contained the words and sentences that were read by or to the students.

Design and Analysis

The study employed a 2 x 3 x 2 x 3 design with repeated measures

on the first two factors. The variables were task (words in isolation, words in context), word difficulty (pre-4th grade, 6th grade, 10th grade), ability (high, low), and grade (2nd, 4th, 6th). The words used for the two tasks were counter-balanced across the tasks, and the results were analyzed using the ANOVA and Newman-Keuls procedures.

Procedures and Scoring

Students were interviewed individually and received both tasks with words at the easiest level before receiving the tasks with words at each successively more difficult level. For the task with words in isolation, the examiners (1) showed the students a word, asked them to pronounce it, or pronounced it for them if necessary, (2) asked the students for one meaning of the word, and (3) asked them for another meaning of the word. For the task with words in context, the examiner (1) showed students a word, asked them to pronounce it, or pronounced it for them if necessary, (2) showed them a sentence containing the word, asked them to read it, or read it for them if they could not, (3) asked students for the meaning of the word in that sentence, (4) showed them another sentence containing the word, asked them to read it, or read it to them if they could not, and (5) asked them for the meaning of the word in that sentence.

Scoring was straightforward. Students were not scored on their reading of the words or sentences. On the task with words in isolation, they received 0 for producing no clear meanings, 1 for one clear meaning, and 2 for two clear meanings. On the task with words in context, they received 0 for producing no appropriate meanings, 1 for one appropriate meaning, and 2 for two appropriate meanings. Transcripts of the students' responses were scored independently by two raters, and the interrater reliability was .98.

Results and Discussion

The main effects of the study are shown in Table 1. The ANOVA

Insert Table 1 about here.

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indicated that the main effects of task, $F(1,18) = 25.02$, word difficulty, $F(2,36) = 77.48$, ability, $F(1,18) = 25.92$, and grade, $F(2,18) = 13.52$, were all significant at $p < .001$. Additionally, the Newman-Keuls test indicated that all pairwise comparisons of the levels of word difficulty and those of grade were significant at $p < .01$.

Two brief comments and one somewhat lengthier comment are appropriate here. First, considered as a group, the students demonstrated their ability to use context to determine the appropriate meaning of polysemous words; their score with words in context was 50% greater than their score with words out of context. Second, the procedures used to scale words for difficulty were very effective; students produced three times as many correct responses to 6th grade words as to 10th grade words and about 35% more correct responses to pre-4th grade words than to 6th grade words.

The third comment, which concerns the effects of grade and ability, is the more lengthy one. Students' success in assigning meaning to polysemous words varied markedly with ability level and grade; high ability students produced about 75% more correct responses than low ability students, 4th graders produced about 50% more correct responses than 2nd graders, and 6th graders produced about 35% more correct responses than 4th graders. Additionally, it should be noted that ability was the more powerful of the two variables. In fact, high ability 2nd graders produced 95% as many correct responses as low ability 6th graders. Clearly, low ability students'

skill in dealing with polysemous words lags extremely far behind that of their high ability counterparts.

We turn now to consideration of our major question, that of the relative skill of high and low ability students at assigning meanings to polysemous words in and out of context. This question is best approached by considering the task x ability x grade interaction, which is shown in Table 2. The results of the ANOVA, $F(2,18) = 2.43$, $p < .12$, indicate an

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Insert Table 2 about here.

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effect often described as "marginally significant." However, the interaction had only four subjects per cell, making the test a relatively weak one, and we therefore believe that the interaction is worth considering.

Several aspects of the interaction are particularly relevant. First, it indicates that our previous statement that students demonstrated their ability to use context to determine the appropriate meaning of polysemous words needs qualification. Low ability students demonstrated very little ability to use context. They produced only 4% more correct responses for words in context than for words in isolation.

Second, the interaction indicates that low ability students' skill at using context to determine appropriate meanings for multiple meaning words improves as they progress through school, and it improves faster than does their skill at dealing with multiple meaning words in isolation. Between 2nd and 6th grade, low ability students' scores with words in context improved by 170%, while their scores with words in isolation improved by only 94%. We believe that the task with words in isolation is distinctly a vocabulary task while that with words in context is a more general comprehension task. Thus, we interpret this result as at

least suggesting that low ability students' vocabulary development lags behind their development of at least some more general skills.

Third, the interaction indicates that by the 6th grade, low ability students' skill at recognizing the appropriate meanings of polysemous words in context is a good deal closer to high ability students' skill at this task than is their skill with words in isolation. At the 6th grade level, low ability students produced 70% as many correct responses as high ability students for words in context but only 44% as many correct responses as high ability students for words in isolation. This result does not precisely replicate the Graves (1979) finding that low ability students do as well as high ability students at assigning appropriate meanings to polysemous words appearing in sentence contexts, but it is definitely in the same direction as that finding. Again, then, it appears that poor readers' specific vocabulary skills are more retarded than their more general comprehension skills.

In general, the study indicates that skill in dealing with multiple meaning words is an important dimension of vocabulary depth. Both tasks with polysemous words were powerful ones in distinguishing high and low ability students; low ability students experienced particular difficulty in dealing with polysemous words in isolation; and skill in dealing with polysemous words grows markedly throughout the elementary school years. Additionally, the study suggests that many but not all 2nd to 6th grade students can use context as an aid in identifying the appropriate meaning of multiple meaning words, and that the Harris-Jacobson and Dale and O'Rourke word lists are very useful in scaling words for difficulty.

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Table 1

Mean Percentages of Correct Responses for Each Condition of Task, Word Difficulty, Ability, and Grade

Task	Words in Isolation		37%	Words in Context		56%			
Word Difficulty	Pre 4th Grade	71%		6th Grade	52%		10th Grade	17%	
Ability		High	59%		Low	34%			
Grade	2nd	31%		4th	46%		6th	62%	

Table 2

Mean Percentages of Correct Responses for the Task x Ability x Grade Interaction

Task	Grade and Ability (High/Low) 2nd	4th	6th
Words in Isolation	29%/17%	42%/25%	75%/33%
Words in Context	58%/21%	67%/50%	83%/58%